

THE RELATIONSHIP BETWEEN *EUPLOEA CALLITHOE* BOISDUVAL AND *E. PHAENARETA* (SCHALLER) (LEPIDOPTERA: NYMPHALIDAE) IN NEW BRITAIN AND NEW GUINEA

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Introduction

The nominate species *Euploea callithoe* Boisduval and *Euploea phaenareta* (Schaller), although treated as conspecific by Corbet (1942, 1943), have been regarded as distinct by other authors (Carpenter, 1953; D'Abrera, 1971). Evidence based on the immature stages suggests that the races of these supposed species, which occur in New Britain and New Guinea, are conspecific but may be specifically distinct from the more western subspecies assigned by Corbet to *E. phaenareta*.

In accordance with the nomenclature of D'Abrera (1971), the following subspecies have been bred: *E. callithoe callithoe* Boisduval from the Brown River, Papua; *E. callithoe callithoe* form *durrsteini* Staudinger from eastern New Guinea; *E. callithoe callithoe* form *hansemanni* Honrath from the Sepik area of New Guinea; and *E. phaenareta unibrunnea* Salvin and Godman from New Britain. In each case the larval food plant is *Cerbera floribunda* (family Apocynaceae), a plant that bears long fleshy leaves and large purple fruit. Growing to a height of thirteen metres, this plant is found throughout Papua New Guinea and New Britain. The early stages and habits of all four insects are identical which leads me to conclude that they are conspecific. A single description of the life history will therefore suffice for all.

Life history and habits

The adults fly in the wet season and are only rarely seen when dry conditions prevail. Captured females will oviposit readily in cages, the larvae growing rapidly under caged conditions. Fourth and fifth instar larvae always resort to the darkest part of the cage in accordance with the natural larval habit of retiring to the lower part of a tree trunk after feeding. In this situation they are extremely well camouflaged. Under natural conditions the incidence of parasitism is fairly high. The photographs below were taken near Lae, P.N.G.

Larval food plant: *Cerbera floribunda*.

OVUM (Fig. 1).

Cream, slightly higher than wide, rounded on the top and slightly ribbed, oviposited on either side of the leaf. Ovum darkens before larva emerges after seven to eight days.

LARVA (Figs 2, 3).

First instar. Overall colour white; head black. Feeds on the edges of the leaf.

Second instar. Grey overall with shining black head; legs, prolegs and anal claspers white; two small tubercles on the second and third thoracic segments.



Fig. 1. Egg on a leaf of the food plant, *Cerbera floribunda*.



Fig. 2. Fifth instar larva at rest with protuberances lowered.

Third instar. Body white; head black with triangular markings; tubercles yellow, tipped with grey; spiracles black with a fine yellow line running beneath them; legs, prolegs and anal claspers grey.

Fourth instar. Overall colour bluish grey with fine broken lines forming bands; lateral surface around the spiracles suffused with yellow; protuberances large and fleshy, pink at the base, grey centrally and tipped white. In this and the following instar the larva abandons the leaves and stems after feeding and rests on the bark of the tree near the base, or at the fork of a limb, where it is well concealed by its colour.



Fig. 3. Fifth instar larva with protuberances erect.

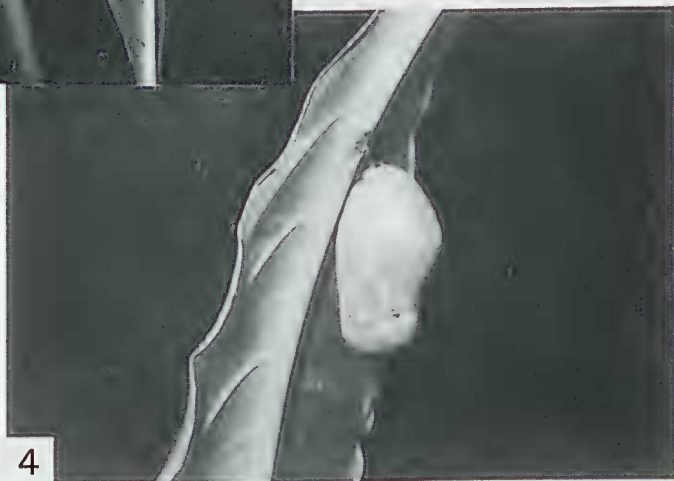


Fig. 4. Pupa.

Fifth instar. The full grown larva is about 50 mm long. Overall colour mushroom with broken bands of white and black; head with black and white diamond-shaped markings; legs, prolegs and anal claspers grey. While feeding, or when aroused, the protuberances are held erect; when resting they are extended over the head in a forward and downward position.

PUPA (Fig. 4).

After resting at the base of the tree, the larva ascends to the upper branches and spins a silken pad on the underside of a leaf and hangs head downwards. Pupation is complete within 24 hours. At first it is yellow in colour but on hardening changes in a few hours to metallic gold. The pupa is large and bulbous, about 20 mm long. Ecdysis takes place after 12 to 14 days.

Discussion

Corbet (1942, 1943) treats *E. phaenareta* (including *E. callithoe*) as a single widespread species occurring from Sri Lanka and Indo-China to the Bismarck Archipelago and the Solomon Islands. Descriptions of the immature stages are rare. Moore (1858, as *prothoe*; 1880-81, as *elisa*; 1890-92, as *corus*) describes and illustrates the early stages from Sri Lanka, and Fountaine (1925-26 & unpublished) the form on Polillo Island in the Phillipines. The only other known published description of the life history is by Ribbe (1895) based on the material from Finschhafen, eastern New Guinea; the illustration of the caterpillar accompanying this work lacks the pair of tubercles on segment eleven shown by Moore and Fountaine. Additionally, according to Mr T. G. Howarth (pers. comm.) the larva of *E. phaenareta* in Malaya also bears these processes. Their apparent absence or reduction is of particular interest since they are invariably present and distinct in the caterpillars of all other known *Euploea* species (Morishita, 1977). The trend for reduction of the anal tubercles shown in all four races bred here may be an indication that they are specifically distinct from the more westerly forms.

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